REMARKS

In the patent application, claims 2-19, 21-23, 25, 27-29, 31 and 32 are pending. In the office action, all pending claims are rejected.

Applicant has amended claims 2-19, 21-23, 25, 27-29, 31 and 32 to change the wording of the claims.

Claim 2 has also been amended such that the transform coefficients representative of the residual data is obtained in a video editing apparatus.

The support for the amendment can be found in Figures 7 and 8 and page 13, line 29 to page 14, line 6.

No new matter has been introduced.

At section 7 of the office action, claim 21 is objected to for being dependent from a canceled claim. Applicant has amended claim 21 to be dependent from claim 19.

At section 9, claims 2-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Applicant has amended claim 2 to specify that the method is tied to a video editing apparatus.

Applicant respectfully requests that the 101 rejection of claims 2-12 be withdrawn.

At section 11, claim 27-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with written description requirement. The Examiner states that claims 27-32 are directed to a computer readable storage medium, but there is no support in the specification for the claimed "computer-readable storage medium".

It is respectfully submitted that software programs are described in the specification (page 14, line 31 to page 15, line 7) and shown in Figure 11. It is known in the art that software programs as depicted in Figure 11 can only be embedded or embodied in a computer readable storage medium, and one form of such medium is commonly known as memory.

Thus, there is sufficient support for the claimed "computer readable storage medium" in the disclosure.

At section 13 of the office action, claims 2-10 and 13-19, 21-23, 25, 27-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dischert et al.* (U.S. Patent No. 5,802,226 A, hereafter referred to as *Dischert*), in view of *Christopolous et al.* (U.S. Patent No. 6,526,099 B1, hereafter referred to as *Christopolous*).

In rejecting independent claim 2, 13 and 18, the Examiner admits that *Dischert* fails to disclose residual video data or error video data, but points to *Christopolous* for disclosing those data.

It is respectfully submitted that *Dischert* discloses two embodiments. The first embodiment is concerned with mixing current video signal with a delayed video signal. The first embodiment has nothing to do with transform coefficients representative of residual data. The second embodiment is concerned with producing a mixed audio/video signal during trick play modes (such as fast forward).

The second embodiment is shown in Figures 4, 5 and 6. As shown in Figure 4, *Dischert* uses a shuffler 408 to rearrange a portion of the video signal from the analog/digital interface 404 so as to provide for accurate reproduction of the video signal during the trick play mode and to distribute errors caused by defects in the tape over a larger video surface (col.4, lines 46-52). Before mixing the rearranged audio signal and the rearranged video signal, a coder 410 is used to transform the rearranged video signal into a transform video signal (Figure 4; Figure 6; col.4, lines 52-54; col.5, lines 47-60). As shown in Figures 4 and 6, *Dischert* uses a coder 410 to mix signals from the shuffler 408 after transforming the signals with a DCT module 60 (see Figures 6) into a second domain such as the spatial frequency domain. The second domain can be a spatial frequency domain (col.5, lines 47-52).

In the second embodiment of *Dischert* for producing a mixed audio/video signal during trick play modes, such as fast forward, only a portion of the video signal is extracted and the shuffler is used to rearrange the extracted portion of the video signal, regardless of the speed of the fast forward mode. As pointed out by the Examiner in the final office action, mailed May 2, 2008 (page 5, sub-section C.IV), the video signal

extraction is performed on an infra-frame basis, rather than an inter-frame basis, and the shuffling would not affect frame dependencies in residual-coded data. The Examiner pointed to *Jang* (U.S. Patent No. 6,178,289 B1) to show that shuffling is performed on a per-frame basis (column 1, line 12; column 2, line 45) wherein the blocks are re-arranged within a frame in a known pattern, not the frames themselves.

If, for the fast forward mode, only a quarter of the video signal for each frame is extracted, there are a few options as to how the video signal is extracted and how the image is presented:

1) if each frame is divided into N macroblocks and N/4 macroblocks are extracted at the **same** locations from each frame, then 3N/4 macroblocks are missing from the displayed image. If no shuffler is used to move the extracted macroblocks around, then the displayed image on the display screen appears to have holes or dark areas. If a shuffler is used to move the extracted macroblocks around to cover the entire screen, then repeated image portions will be seen on the screen. This is not how a fast-forwarded image is presented.

2) if each frame is divided into N macroblocks and N/4 macroblocks are extracted at the **different** locations from one frame to another, then it is possible to use a shuffler to move the extracted macroblocks in each frame to the correct displayed locations so that the entire screen is covered with a jumpy but recognizable image. This is similar to a change-speed playback mode as disclosed in *Kim et al.* U.S. Patent No. 5,479,265, hereafter referred to as *Kim*). In the change-speed playback mode as disclosed in *Kim*, the video data recorded on the video tape is scanned by a head disposed in a spiral form. As such, only a small portion of the video data recorded on the tape is repeatedly scanned. A large portion of the video data, called covered-up portions or no-playback portions, is not scanned. For the purpose of preventing degradation in a picture quality due to the no-playback portions, the playback portions and the no-playback portions are shuffled with each other and then recorded on the video tape. The shuffled video data is recorded and played back. The shuffling of the video data is an important factor of determining the recording format. In a six-time playback mode, for example, only one sixth of the video data is scanned and displayed. Because of the data shuffling, the portion of the video data scanned in one frame may not be the same portion that is scanned in the next frame.

For that reason, the residual data from one frame may not be useful for the next frame because of the data shuffling.

It is known that residual data, as disclosed in *Christopolous*, is a value within a frame of video data related to a value in a neighboring frame at each <u>corresponding</u> location *(x,y)*. In particular, error data is used for motion compensated prediction in reconstructing frame based on the previous frame. More specifically, the residual data *E(x,y)*, along with a predicted frame data *P(x,y)*, is used to reconstruct a frame *R(x,y)* at any time *t* (see Equation 8 of the specification). If the location of the extracted portion of one frame is different from the location of the extracted portion of a neighboring frame, it may not be possible to reconstruct the video signal in a frame based on the previous frame.

Thus, in order to incorporate the residual data or error data as disclosed in *Christopolous*, the shufflers and the de-shufflers must be taken out in any video recording and playback device. If the shufflers and the de-shufflers are taken out from the video recorder and playback device of *Dischert*, the trick play modes may no longer function.

For the above reasons, the residual data or error data as disclosed in *Christopolous* cannot be used in a data shuffling system for change-speed video playback mode, as disclosed in *Dischert*.

Dischert, in View of *Christopolous*, Fails to Render Claims 2, 13, 18 and 27 Obvious

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion of modification to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). *See* MPEP 2143.01 V. In the instant case, the use of residual data, according to *Christopolous*, instead of regular digital video data, would render the video device as disclosed in *Dischert* unsatisfactory regarding its trick play modes.

Likewise, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). *See* MPEP 2142.01 VI. In the instant case, the removal of the shufflers in order to accommodate the residual data

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according to *Christopolous*, would render the video device as disclosed in *Dischert* less accurate or even non-functional.

For the above reasons, *Dischert*, in view of *Christopolous*, fails to render claims 2, 13, 17 and 18 obvious.

As for claims 3, 5-10, 14-17, 19-23, 25, 28, 29 and 31, they are dependent from claims 2, 4, 13, 18 and 27 and recite features not recited in claims 2, 4, 13, 18 and 27. For reasons regarding claims 2, 4, 13, 18 and 27 above, *Dischert*, in view of *Christopolous*, also fails to render claims 3, 5-10, 14-17, 19-23, 25, 28, 29 and 31obvious.

Furthermore, claim 3 is dependent from claim 2 and further includes the limitations of obtaining motion compensated prediction data from decoded video data; and transforming the motion compensated prediction data for providing editing data for use in said modifying.

Both *Dischert* and *Christopolous* fail to disclose those features. Thus, the cited *Dischert* and *Christopolous* references, whether used individually or in combination, fail to render claim 13 obvious.
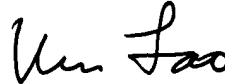
At section 7, claims 11, 12 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dischert*, in view of *Christopolous* and further in view of *Oguro* (U.S. Patent No. 5,477,276). The Examiner cites *Oguro* for disclosing advance fade-in effects.

It is respectfully submitted that claims 11, 12 and 32 are dependent from claims 2 and 27 and recite features not recited in claims 2 and 27. For reasons regarding claims 2 and 27 above, they are also distinguishable over the cited *Dischert*, *Christopolous* and *Oguro* references.

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CONCLUSION

Claims 2-19, 21-23, 25, 27-29, 31 and 32 are allowable. Early allowance of all pending claims is earnestly solicited.

Respectfully submitted,

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